Geophysical Research Abstracts
Vol. 14, EGU2012-3654-1, 2012
EGU General Assembly 2012


# The influence of rainfall on the coastal slope deformation of the rivers in permafrost conditions (laboratory simulation)

I.I. Gritsuk, E.I. Debolskaya, O.Ja. Maslikova, and E.V. Zamjatina

Water Problems Institute, Russian Academy of Sciences, Moscow, Russian Federation (e_debolskaya@yahoo.com, +7(499)1357201)

In the laboratory experiment there were studied the interaction between the river runoff and frozen soil under the change of the thermal (warming) and mechanical (impact of rain) external influences.
We studied the time of thawing of soil, infiltration in soil, sediment transport in the channel under the influence of the slope flows, caused by the permafrost thawing and storm flows. The mathematical model for predicting the dynamics of river channels in the permafrost under the influence of external factors was proposed.
A system of equations, fully describing the motion of soil on the slopes in permafrost zone, taking into account the intensity of rain in a time-varying ice content of the soil is proposed.
It was established experimentally that capacity of the soil is less at a higher initial iciness. As the thawing of the soil capacity is increased, thereby reducing the share of the slope flow.
At a constant rate of infiltration ice content and the flow depend only on the intensity of rain. At a low intensity there is no time to saturate the soil and runoff is absent. The experimental data agree well with calculations by the proposed system of equations.
This work was supported by RFBR (grants № 11-05-00393, 11-08-00202).